uFR Online – Quick Start Guide
Version 3.1

Digital Logic Ltd.

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Installing uFR Online Reader

Follow the instructions below to install your uFR Online reader.

Step 1: Power on a device

1. Connect the device to a power source.
2. Wait for a few moments to device boot in Access Point mode (see LED status table below).
3. **Device will blink until client is not connected.**

Step 2: Connect to the uFR Online

1. Scan for networks using your WiFi enabled device (computer, smartphone etc.).
2. Connect to a device named ONxxxxxx.
3. Wait for the connection to be made successfully.
4. Open your favorite web browser and navigate to http://192.168.4.1

Step 3: Set up your device

1. After the web page is loaded successfully log in using default credentials (see table 1 below).
2. Wait for a few moments to scan the device for available WiFi networks.
3. Select a WiFi network and click the connect button.
4. Enter password for wireless network if needed and wait to connect successfully.

Step 4: Finish setting up your device

1. Click on uFR Online button on the top left corner to find out your new IP address.
2. Reboot your uFR Online reader.

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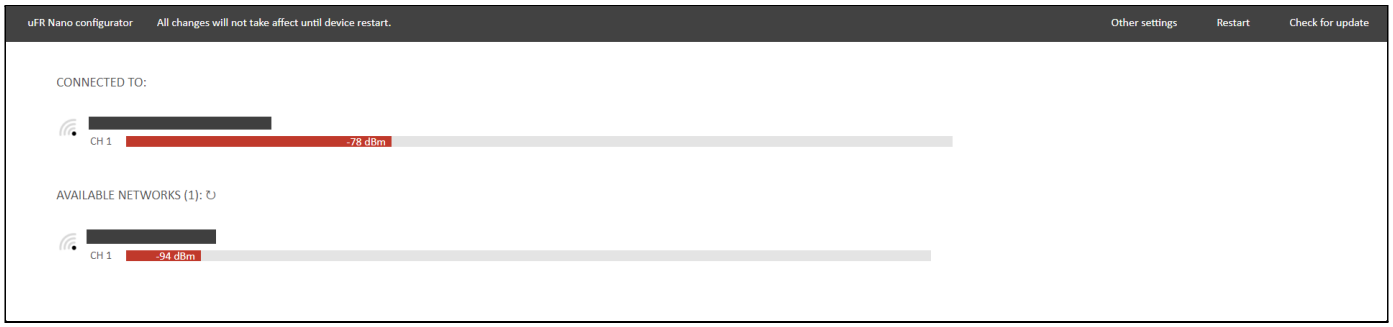
uFR Online Reader settings

Follow the instructions below to change uFR Online reader settings.

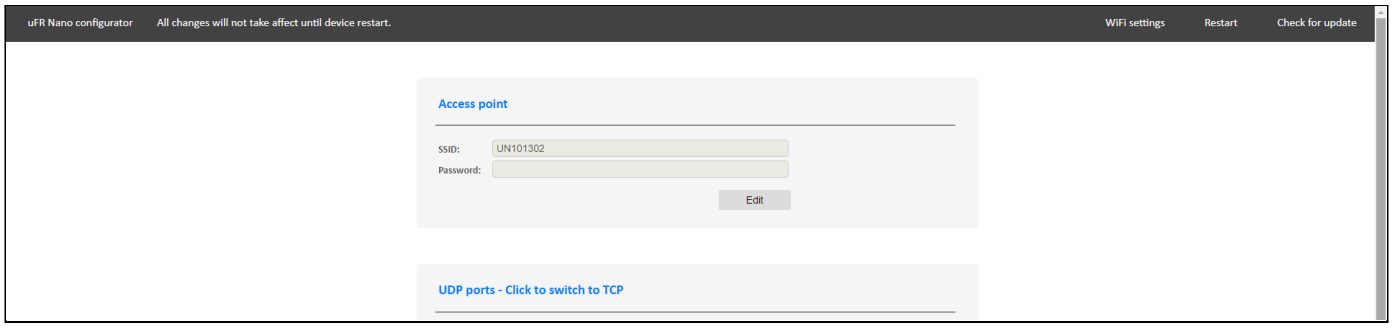
Open WiFi network settings dashboard

1. Open your favorite web browser and navigate to http://<device-ip-address>.
2. Log in using default credentials (see table 1 below).
3. After the web page is loaded successfully, WiFi settings dashboard will be shown.
4. **If the reader is working in BLE, BT or HID mode, WiFi station mode is not available (Only AP).**



Open advanced settings dashboard

1. Follow the instructions above (WiFi network setting section).
2. Click on the Other settings button.
3. Advanced settings dashboard will be shown on screen.



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uFR Online Test

1. Open advanced settings dashboard.
2. Navigate to the Open μFR Online test section and click.
3. Use color wheels to change LED colors.
4. Click on the Beep button to send a sound signal.
5. Approach an NFC card or tag to read UID.

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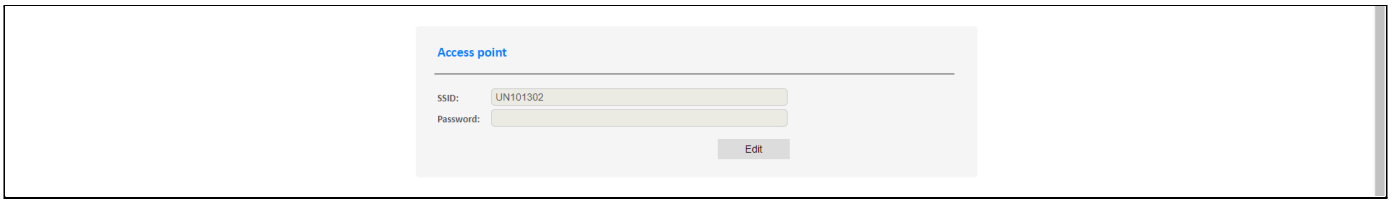
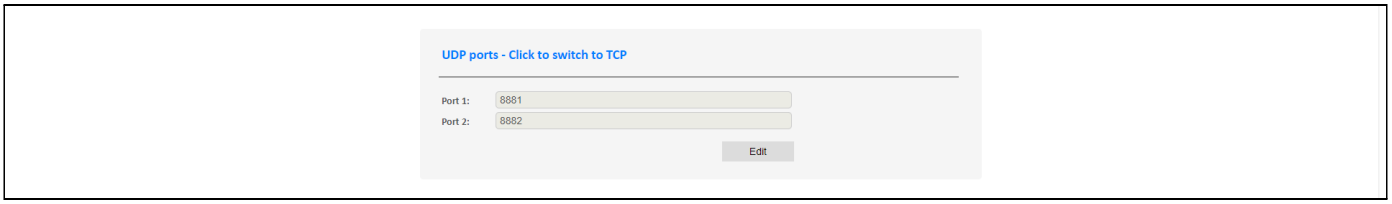
Access Point settings

1. Open advanced settings dashboard.
2. Click on the Edit button in section Access point.
3. Change fields SSID and Password.
4. Click on the button Save.



UDP/TCP ports and protocols settings

1. Open advanced settings dashboard.
2. Click on Edit button in section UDP/TCP ports..
3. Change fields Port 1 and Port 2.
4. Click on the button Save.
5. Click on UDP/TCP ports header text to toggle between these two protocols.



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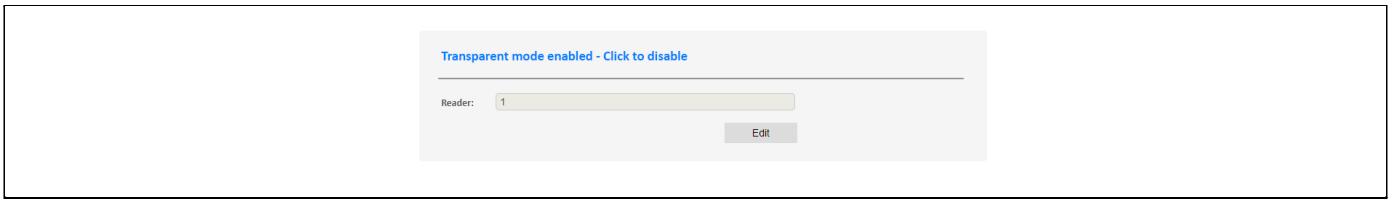
UART settings

1. Open advanced settings dashboard.
2. Click on the Edit button in the section UART Baud rates.
3. Change fields UART 1 and UART 2.
4. Click on the button Save.
5. Click on UART2 RS485 disabled/enabled to toggle RS485 support on the second serial port.

Transparent mode settings

1. Open advanced settings dashboard.
2. Click on the Edit button in section Transparent mode.
3. Change field Reader to toggle between first and second serial ports.
4. Click on the button Save.
5. Click on Transparent disabled/enabled text to toggle transparent mode.



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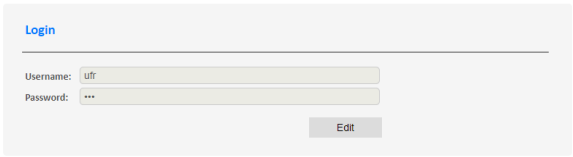
Login credentials settings

1. Open advanced settings dashboard.
2. Click on the Edit button in the Login section.
3. Change fields Username and Password.
4. Click on the button Save.



Master/Slave mode settings

1. Open advanced settings dashboard.
2. Click on text Working in Master/Slave mode to toggle between these two modes.

Bluetooth Serial mode settings – available in versions 2.0+

1. Open advanced settings dashboard.
2. Click on text Bluetooth mode enabled/disabled to toggle Bluetooth serial mode.
3. This setting is only available in slave mode only if Bluetooth Low Energy mode is disabled.

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Bluetooth HID mode settings – available in versions 2.0+

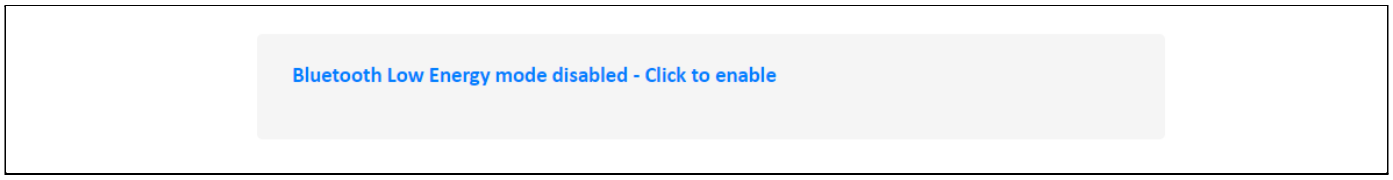
1. Open advanced settings dashboard.
2. Click on text Bluetooth mode enabled/disabled to toggle HID mode.
3. This setting is only available in master mode.

Bluetooth HID mode reverse UID settings – available in versions 2.0+

1. Open advanced settings dashboard.
2. Click on text Bluetooth HID mode UID /not/ reversed to change settings.

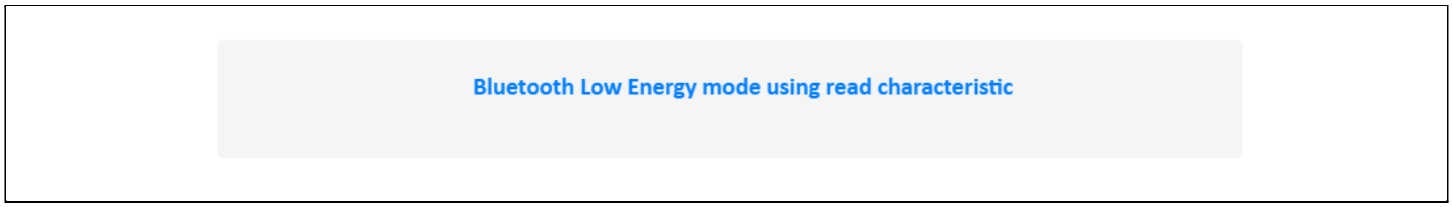
Bluetooth Low Energy mode settings – available in versions 2.0+

1. Open advanced settings dashboard.
2. Click on text Bluetooth Low Energy mode enabled/disabled to toggle BLE mode.
3. This setting is only available in slave mode and only if Bluetooth Serial mode is disabled.



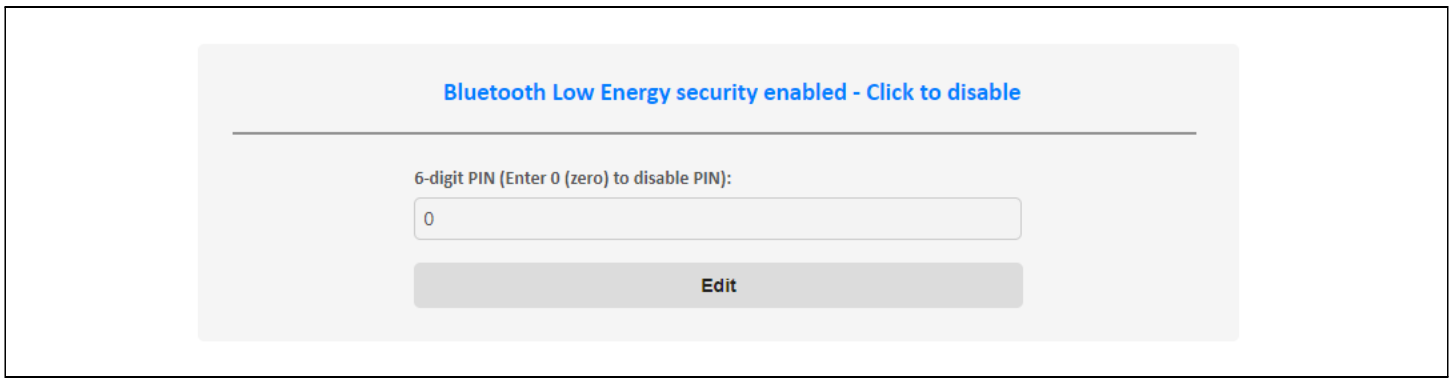
Bluetooth Low Energy mode characteristic settings– available in versions 2.0+

1. Open advanced settings dashboard.
2. Click on text Bluetooth Low Energy mode using read/notify characteristic to toggle BLE receiving data mode.
3. This setting is only available in slave mode and only if Bluetooth Serial mode is disabled.



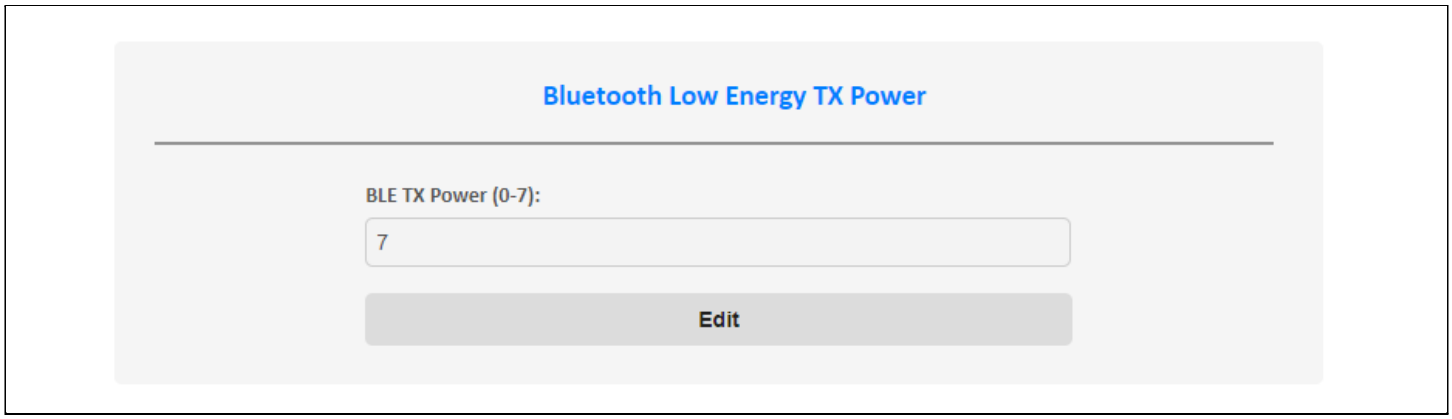
Bluetooth Low Energy mode security settings– available in versions 2.4.7+

1. Open advanced settings dashboard.
2. Click on text Bluetooth Low Energy security enabled/disabled to toggle BLE enable or disable security protocols.
3. If security protocols are enabled you can enter 6-digit PIN or enter 0(zero) to disable PIN authorization.
4. This setting is only available if Bluetooth Low Energy mode is disabled.



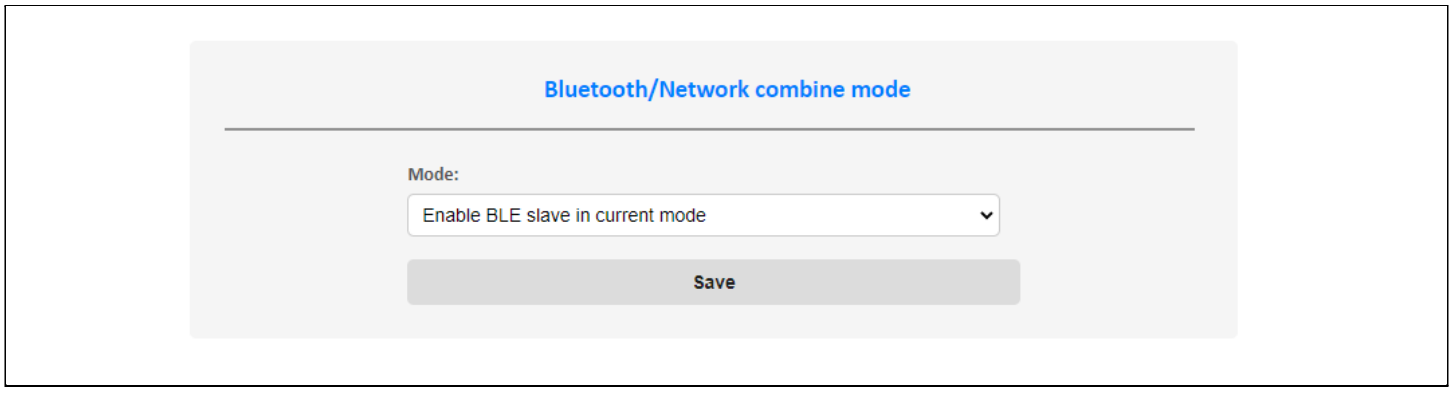
Bluetooth Low Energy TX power settings– available in versions 2.5.8+

1. Open advanced settings dashboard.
2. Click on text Bluetooth Low Energy security enabled/disabled to toggle BLE enable or disable security protocols.
3. Set TX power from 0 to 7. Default is 7, that is the highest available TX power. To reduce the BLE range, set a lower value.



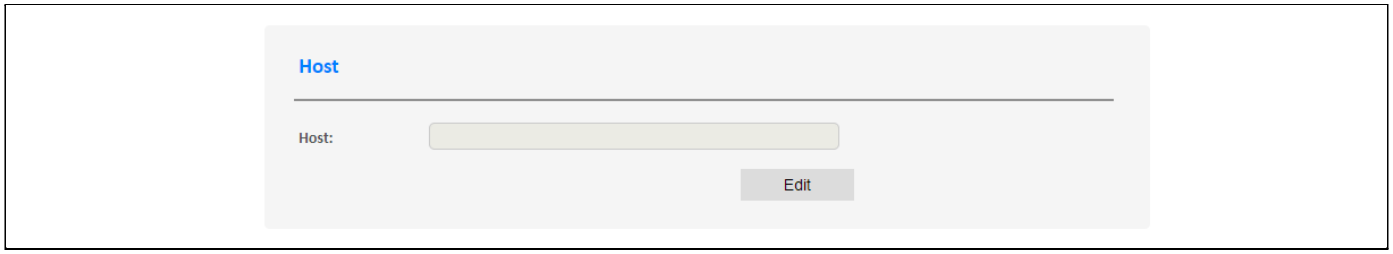
Bluetooth/Netowork combine mode– available in versions 2.5.9+

1. Open advanced settings dashboard.
2. Navigate to Bluetooth/Network combine mode section.
3. Select "Enable BLE slave in current mode" to enable BLE slave mode in combination with current mode (eg. Master mode, UDP/TCP slave mode).
4. Select "Enable BT classic slave in current mode" to enable BT Classic SPP slave mode in combination with current mode (eg. Master mode, UDP/TCP slave mode).



Host address settings

1. Open advanced settings dashboard.
2. Click on the Edit button in the Host section.
3. Change field Host.
4. Click on the button Save.
5. This setting is only available in master mode.



Using Basic HTTP authentication: http://username:password@example.com/

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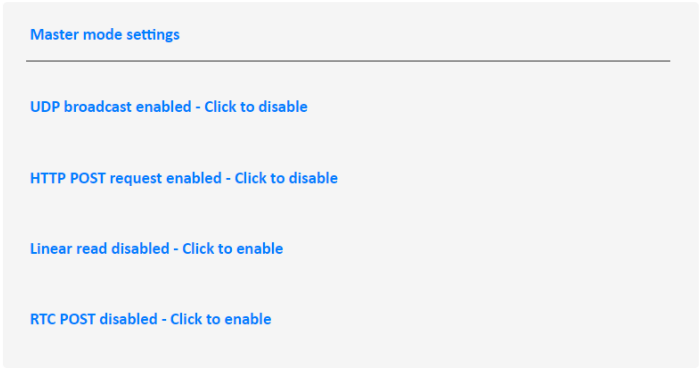
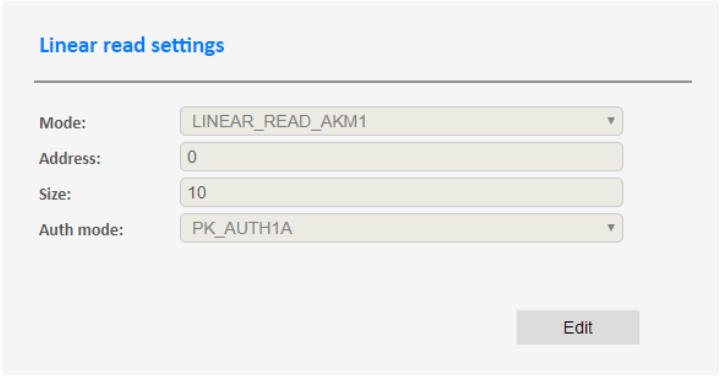
Master mode settings

1. Open advanced settings dashboard.
2. Switch to master mode.
3. Click on the option that you want to enable or disable.
4. This setting is only available in master mode.



Linear read settings

1. Open advanced settings dashboard.
2. Switch to master mode.
3. Enable Linear read.
4. Click on the Edit button and change linear read settings.
5. Click on the button Save.
6. This setting is only available in master mode.



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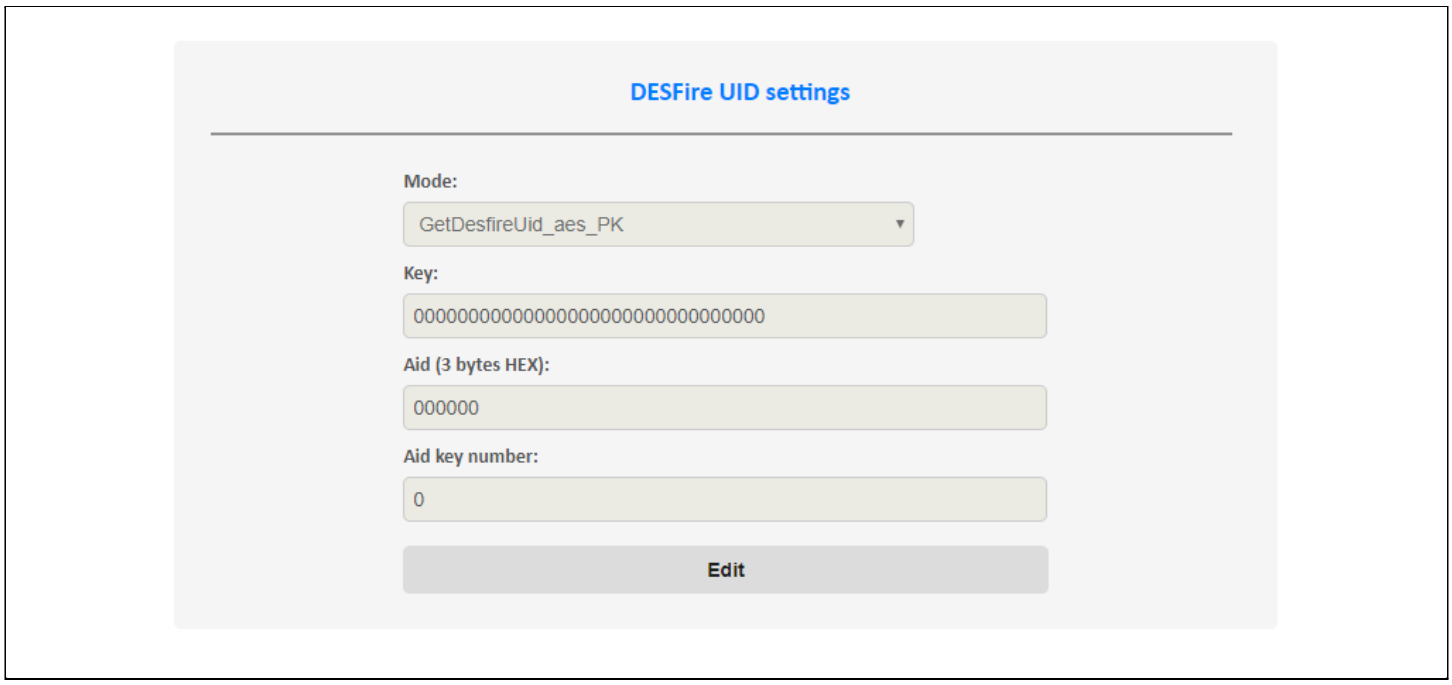
DESFire UID settings

1. Open advanced settings dashboard.
2. Switch to master mode.
3. Enable DESFire UID.
4. Click on Edit button and change DESFire UID settings.
5. Click on the button Save.
6. This setting is only available in master mode.



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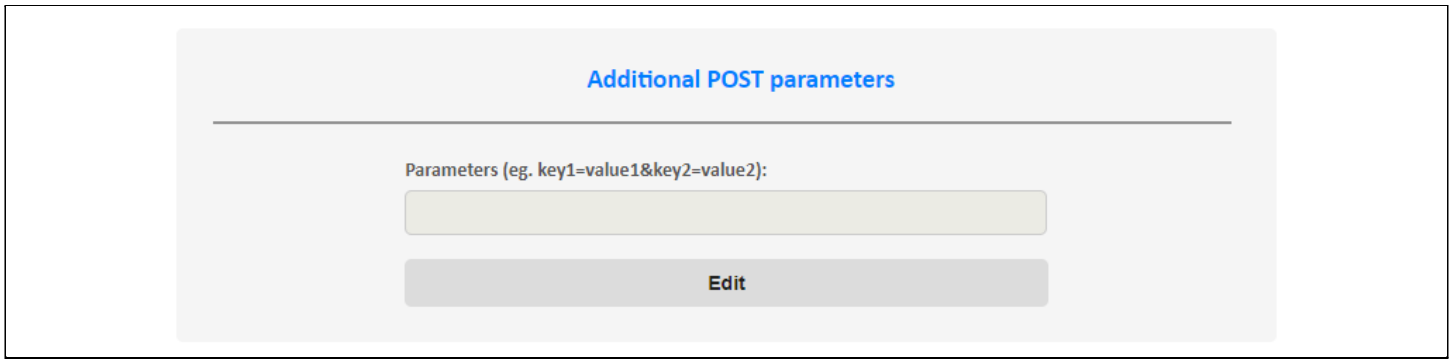
Additional POST parameters

1. Open advanced settings dashboard.
2. Click on the Edit button in the Additional POST parameters.
3. Change field Parameters.
4. Click on the button Save.
5. This setting is only available in master mode.



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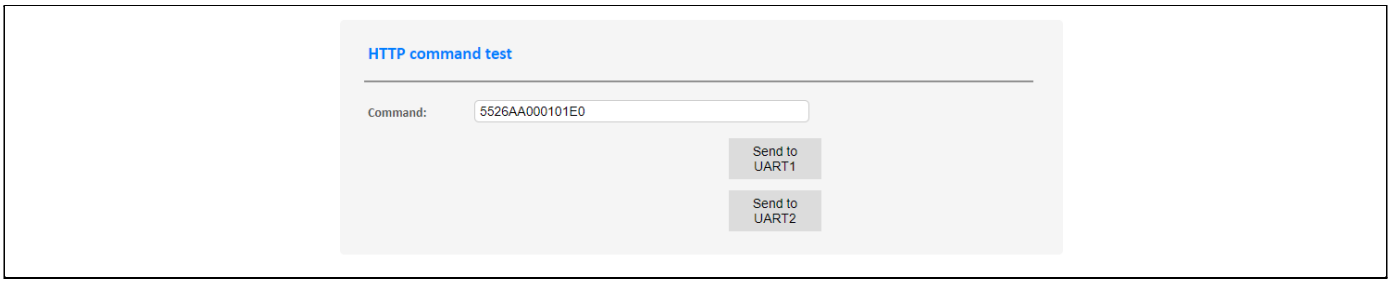
HTTP command test

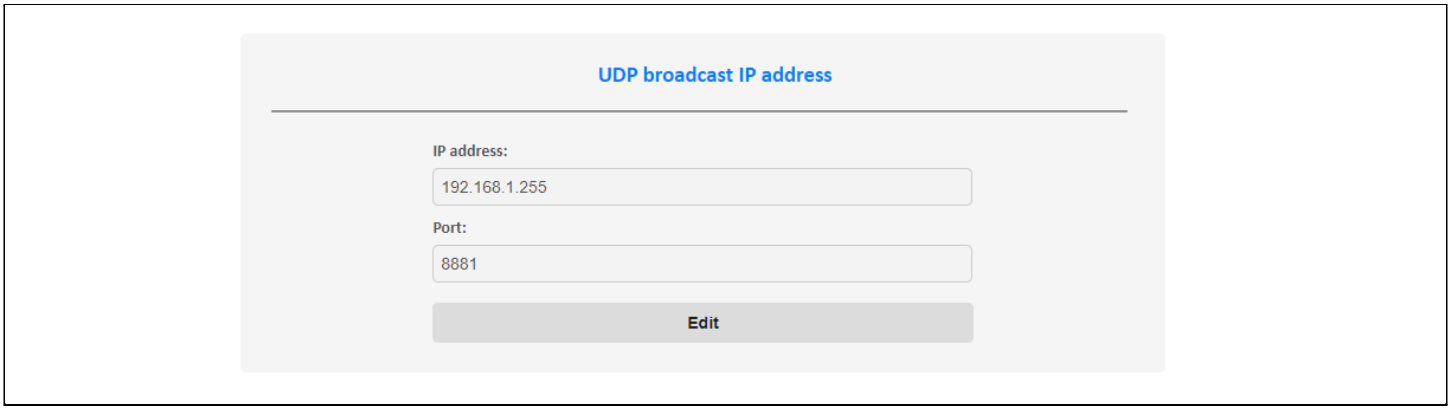
1. Open advanced settings dashboard.
2. Write HEX string in field Command.
3. Click on the button Sent to UART1/UART2.



For more informations about COM protocol visit:
https://www.d-logic.net/code/nfc-rfid-reader-sdk/ufr-doc/raw/master/uFR_COM_Protocol.pdf

UDP broadcast IP settings

1. Open advanced settings dashboard.
2. Click on Edit button and change UDP broadcast IP address and port.
3. Click on the button Save.
4. This setting is only available in master mode.



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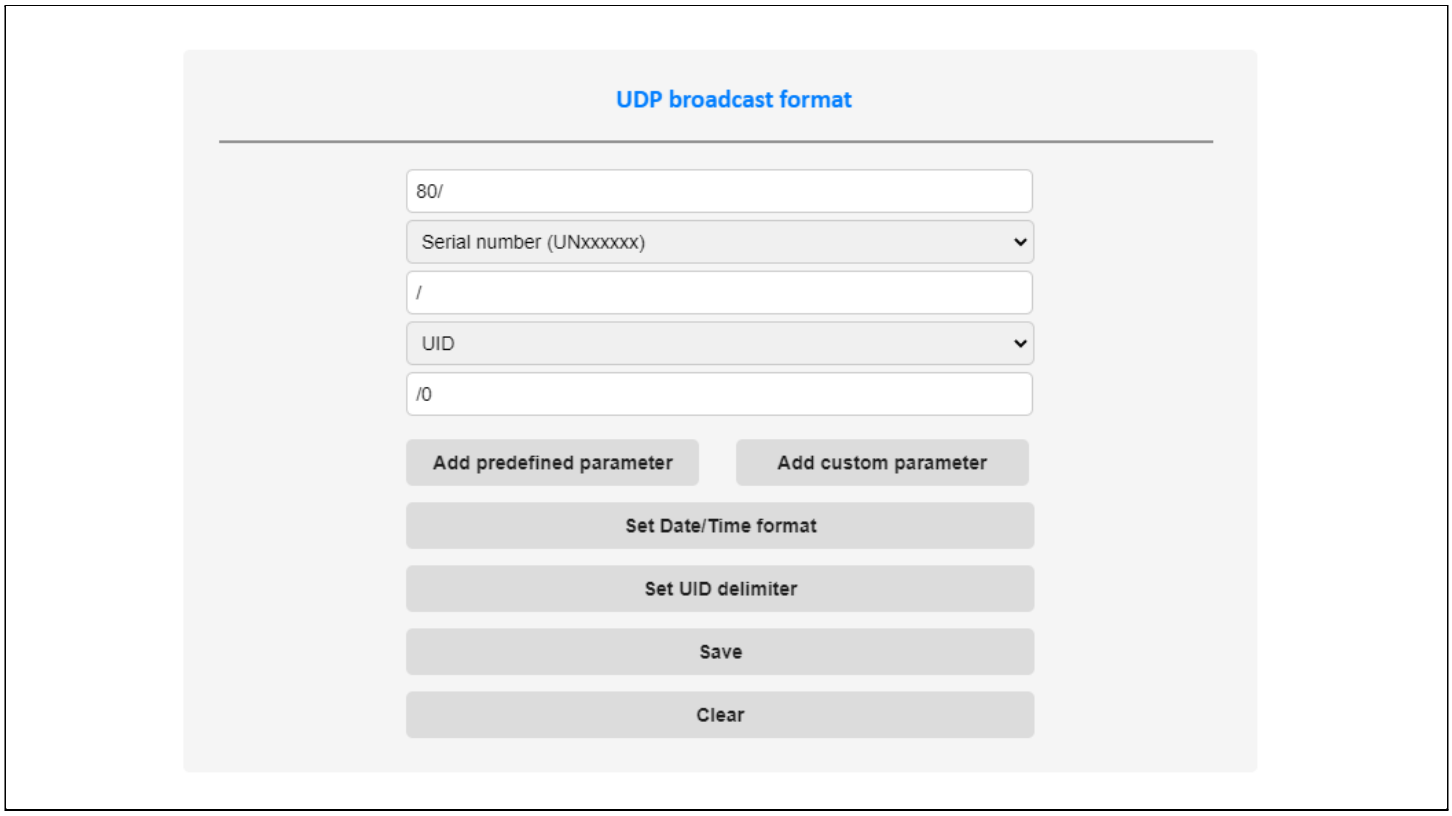
UDP broadcast format settings

1. Open advanced settings dashboard.
2. Navigate to UDP broadcast and edit parameters.
3. Click on the button Save.
4. This setting is only available in master mode.



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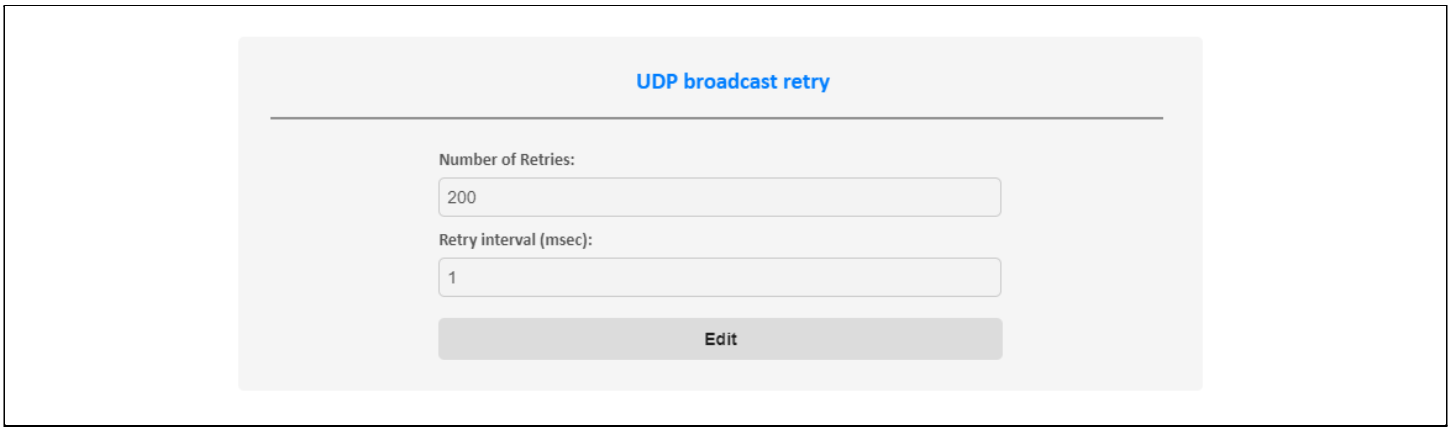
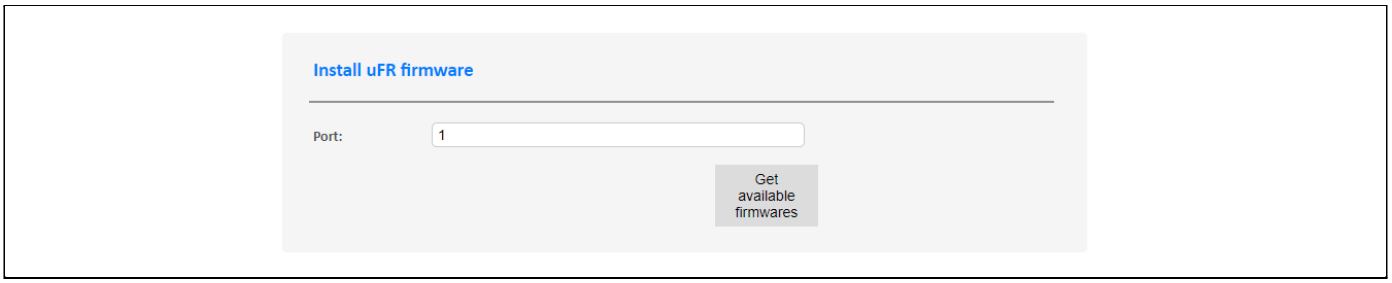
UDP broadcast retry settings

1. Open advanced settings dashboard.
2. Click on the Edit button and change the number of retries (max. 255) and interval (max. 10000).
3. Click on the button Save.
4. This setting is only available in master mode.



Install uFR firmware

1. Open advanced settings dashboard.
2. Navigate to install the uFR firmware section.
3. Select port and click Get available firmwares button.
4. Click on the firmware version to install and wait for a confirmation message.



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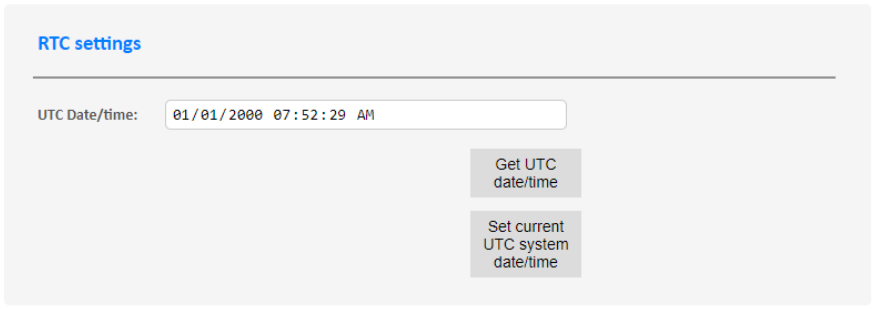
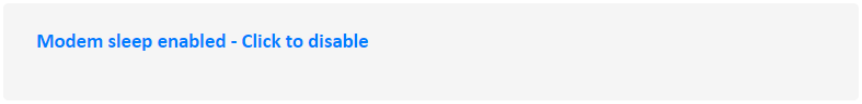
RTC settings

1. Open advanced settings dashboard.
2. Navigate to the RTC settings section.
3. Click on Get UTC date/time button to get current RTC UTC date/time.
4. Click on Set current UTC system date/time button to set RTC UTC date/time from system.



Modem sleep settings

1. Open advanced settings dashboard.
2. Navigate to the Modem sleep section.
3. Click on text Modem sleep enabled/disabled to toggle.
3. Modem sleep can reduce performance, but also reduces heating significantly.



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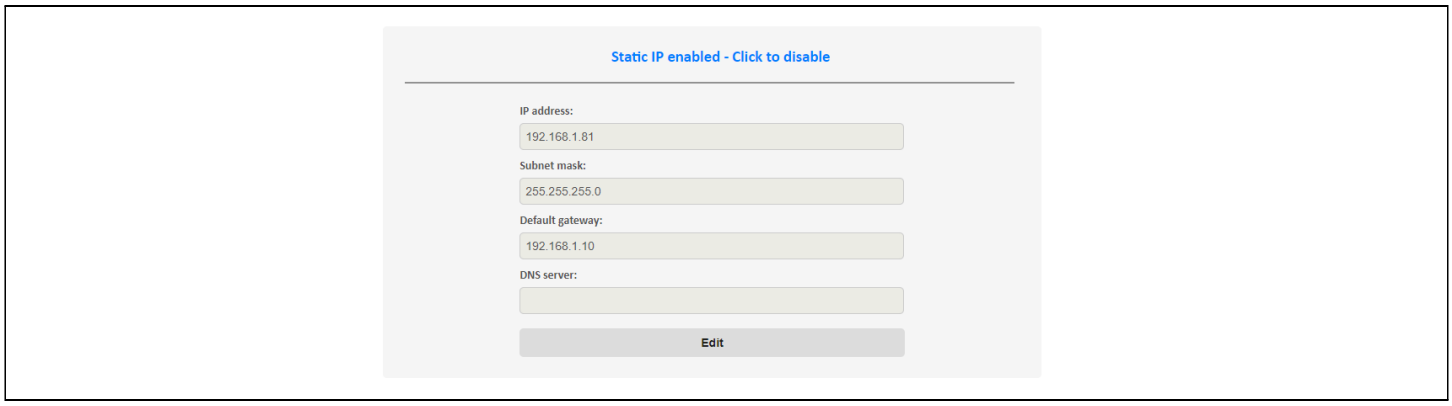
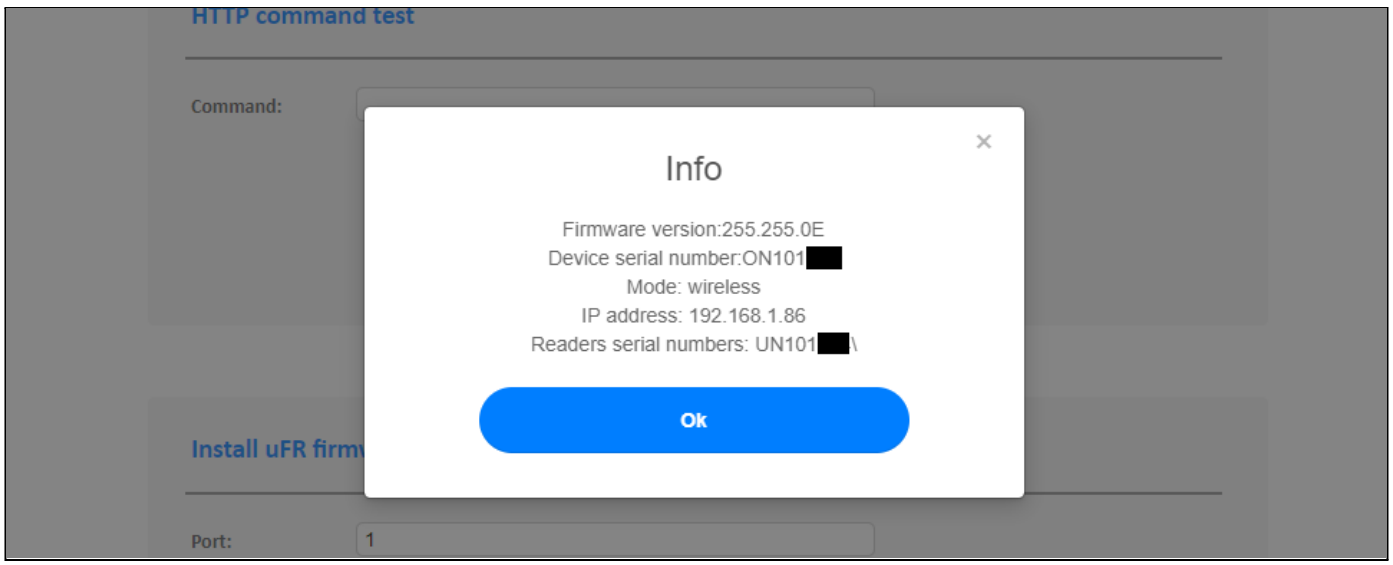
Static IP address settings

1. Open advanced settings dashboard.
2. Navigate to the static IP section.
3. Click on text Static IP enabled/disabled to toggle.
4. Click on the Edit button and change ip settings.
5. Click on the button Save.
6. Note: If you set wrong parameters, use uFR Online flasher to factory reset.



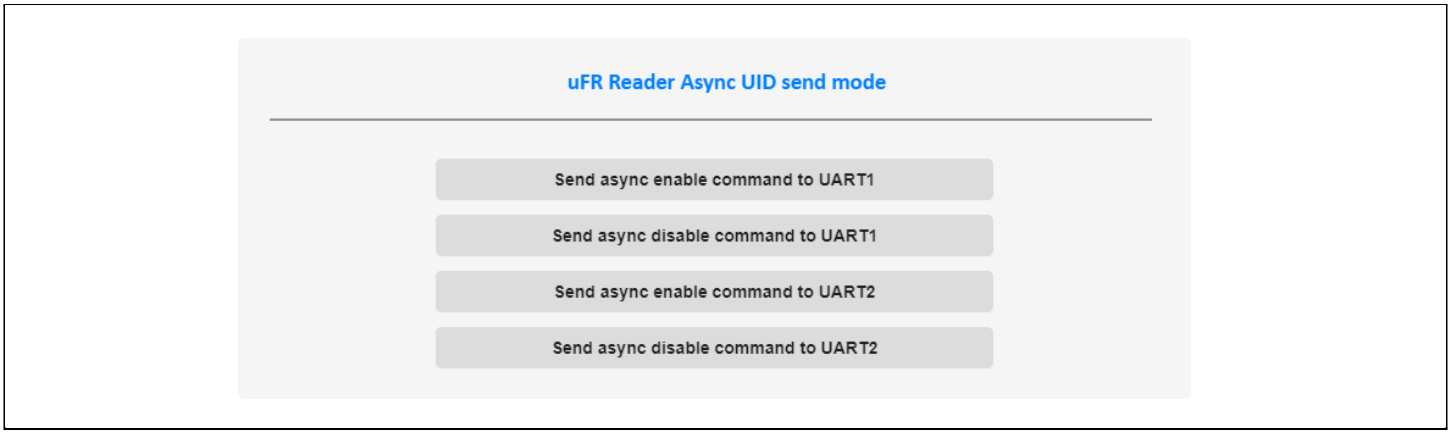
Basic information

1. Click on uFR Online button on the top left corner.
2. Basic information about the device will pop up on screen.



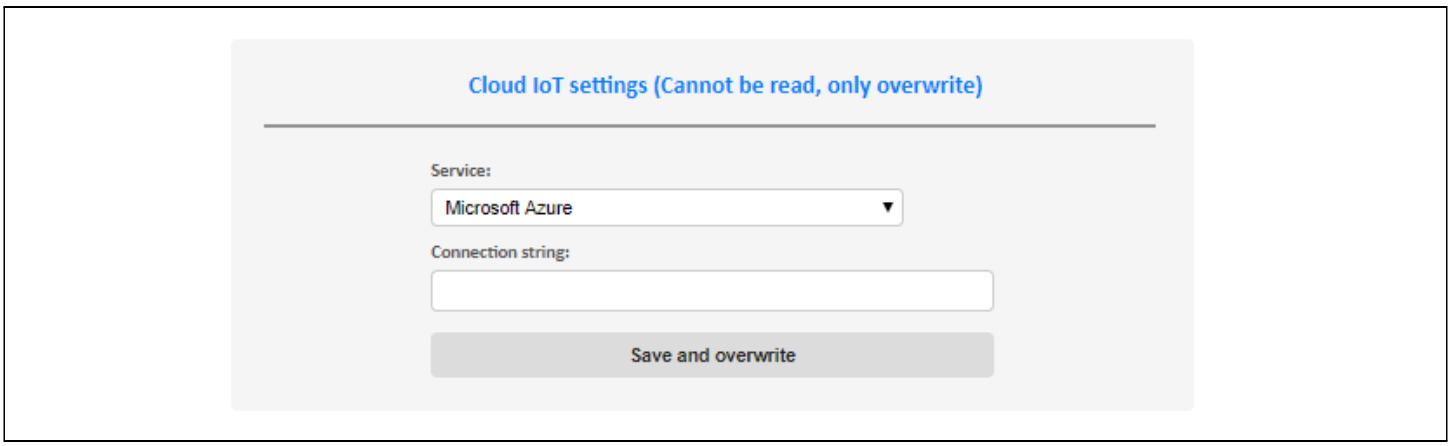
uFR Reader Async UID send mode

1. Open advanced settings dashboard.
2. Click on Send async enable command to UART1/2 to enable Async UID mode.
3. Click on Send async disable command to UART1/2 to disable Async UID mode.



Cloud IoT settings

1. Open advanced settings dashboard.
2. Switch to master mode.
3. Enable Cloud IoT support.
4. Select Cloud IoT service from list and enter required data.
5. Click on the button Save and overwrite. **All settings are read only.**
6. This setting is only available in master mode.



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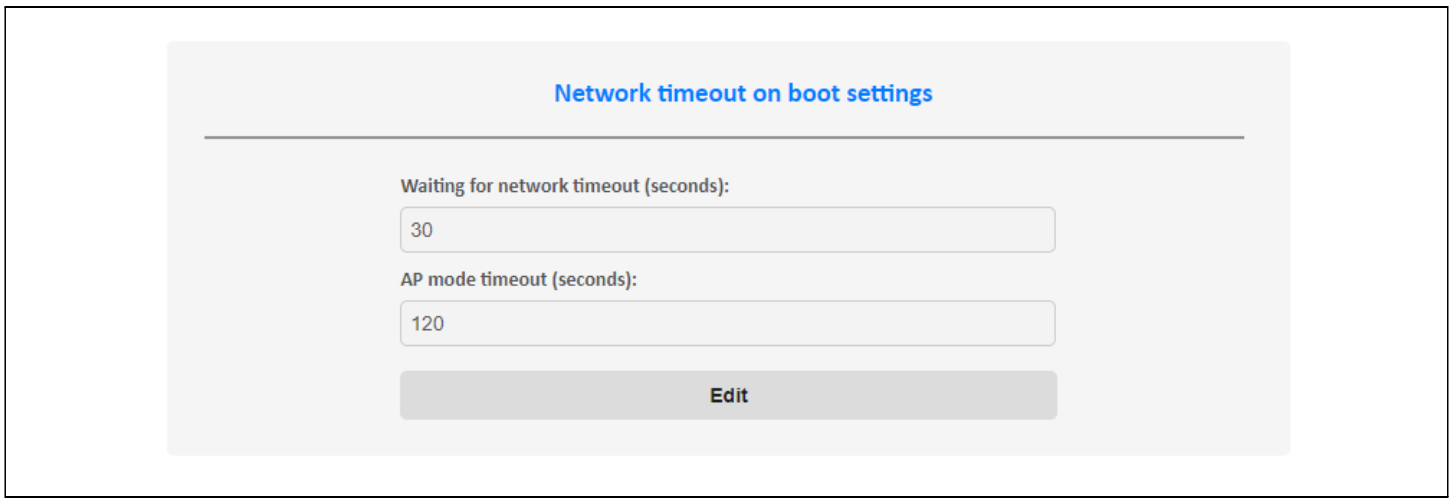
Network timeout on boot settings

1. Open advanced settings dashboard.
2. Click on the edit button and change timeout intervals..
3. Click on the save button.

Waiting for network timeout determines how long the device will wait for the network before turning AP mode on.
AP mode timeout determines how long the device will be in AP mode before trying again to connect. (min. 5s)



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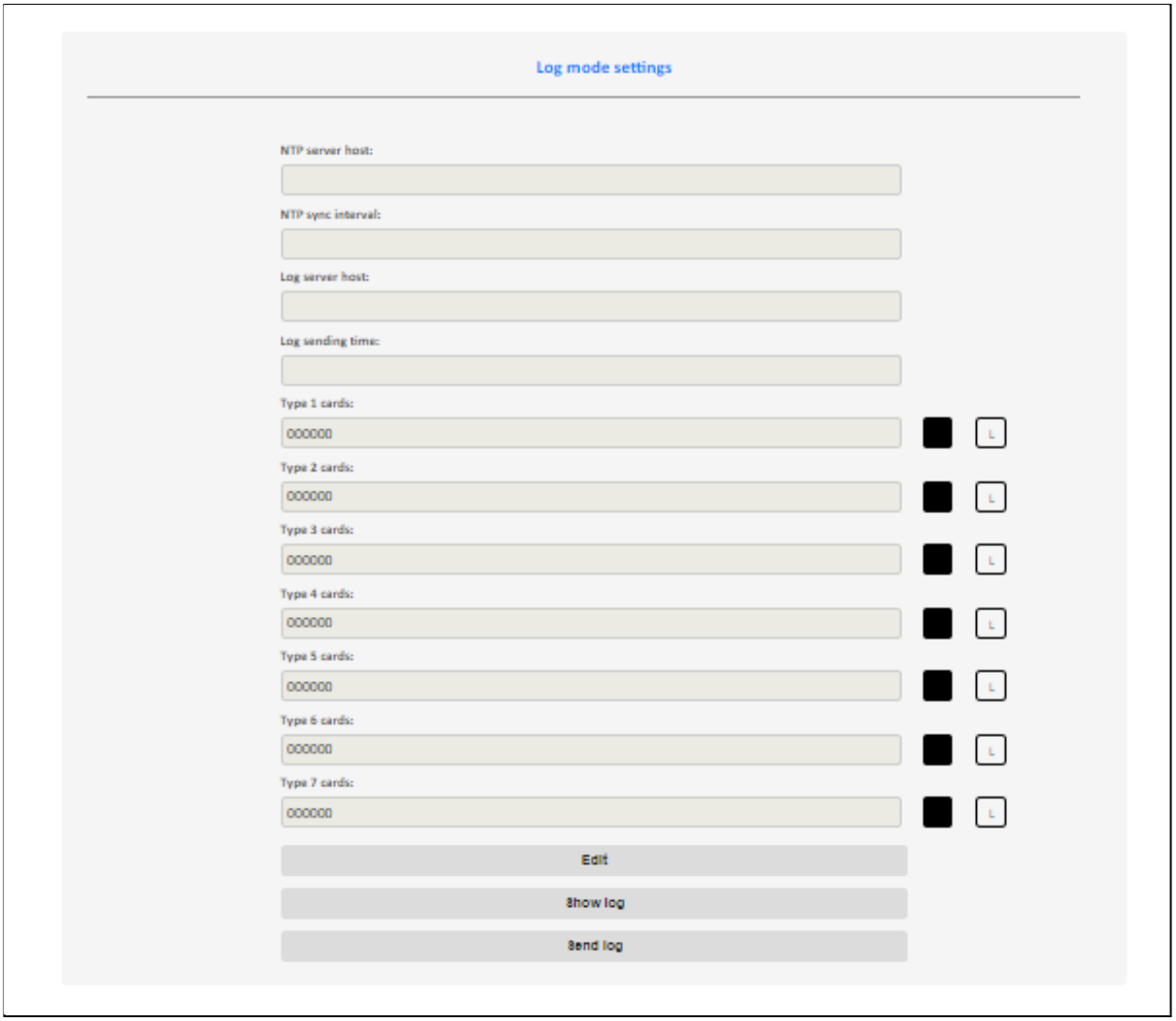
Log mode settings

1. Open advanced settings dashboard.
2. Switch to master mode.
3. Enable Log mode support.
4. Navigate to the Log mode setting and click on the Edit button.
5. Enter NTP server host, NTP sync interval (in hours), Log server host (URL where to send log), log sending time (when to automatically send log).
5. Click on the button Save.
6. This setting is only available in master mode.



Using Basic HTTP authentication: http://username:password@example.com/

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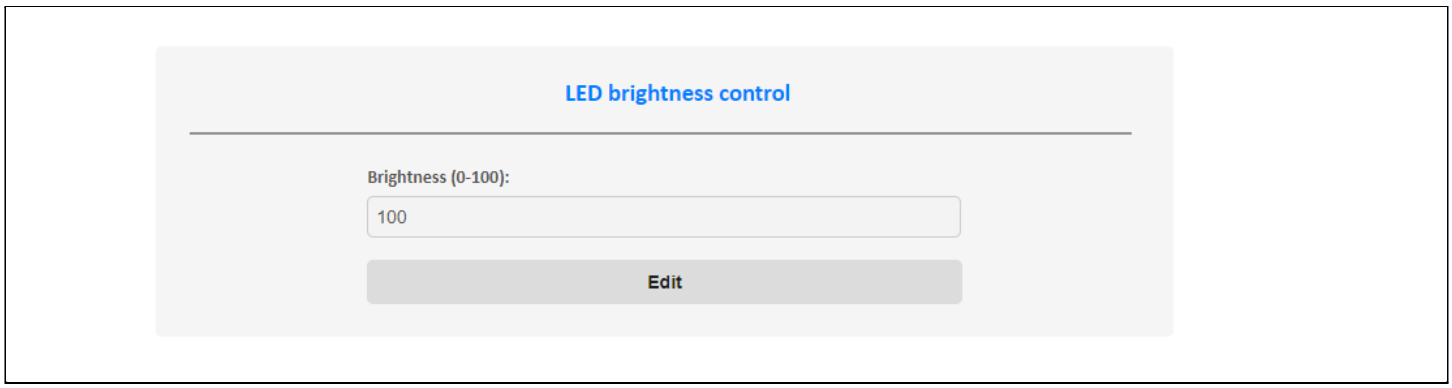
LED brightness control

1. Open advanced settings dashboard.
2. Click on the edit button and change brightness to a value between 0 and 100.
3. Click on the save button.

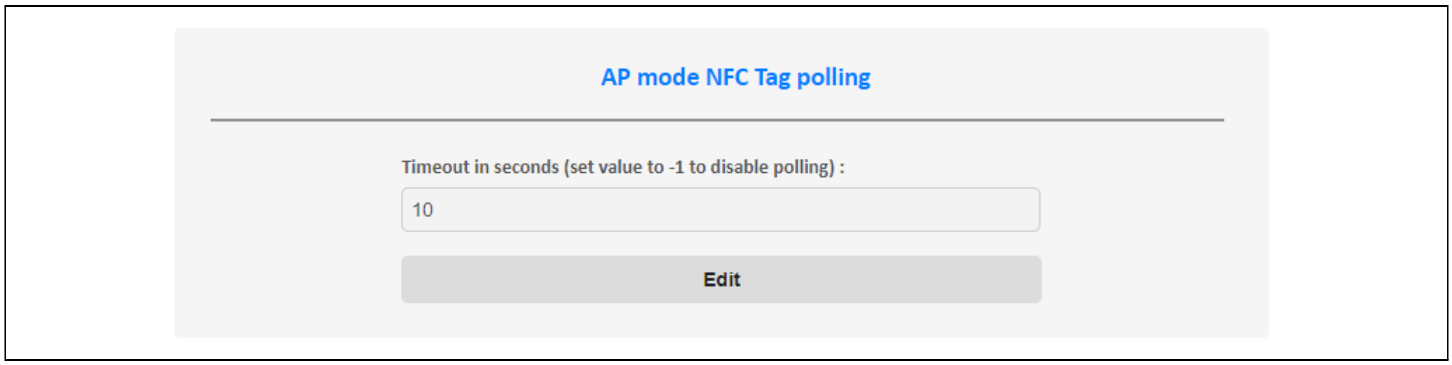
LED brightness control is global and applies to all modes.



AP mode NFC Tag polling settings

1. Open advanced settings dashboard.
2. Click on the edit button and change timeout. To disable polling enter **-1**.
3. Click on the save button.

AP mode NFC Tag polling timeout is the time between reading NFC Tag that contains WiFi or Bluetooth connecting parameters and getting commands from transparent mode over USB.



uFR Online LED status table

In the table below are described all LED states of uFR Online.

LED status color		Description
Steady white	Steady white	Device is booted. Waiting for connection.
Steady blue	Steady blue	Device is booted in Bluetooth serial mode.
Steady cyan	Steady yellow	Device connected to WiFi in Slave mode.
Steady cyan	Steady cyan	Device connected to LAN in Slave mode.
Steady blue	Steady magenta	Device connected to WiFi in Master mode.
Steady magenta	Steady magenta	Device connected to LAN in Master mode.
Blinking cyan	Blinking yellow	Device is visible as AP in Slave mode.
Blinking blue	Blinking magenta	Device is visible as AP in Master mode.
Steady blue	Steady blue	Device is booted in Bluetooth serial mode.
Steady orange	Steady orange	Device is booted in HID mode.
Steady light blue	Steady light blue	Device booted in Bluetooth Low energy mode.
Steady red	Steady red	Device is booted in uFR Nano flashing mode.
Steady green	Steady green	Device is updating firmware OTA.

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uFR Online default settings table

In the table below are shown default settings for uFR Online.

Parameter	Value
Access point IP address	192.168.4.1
Server protocol	UDP
Port 1	8881
Port 2	8882
UART1 baud rate	115200
UART2 baud rate	115200
RS485 support	Disabled
Transparent mode	Enabled
Transparent device	1
Master/Slave mode	Slave
AP SSID	uFR Online Serial number (ONxxxxxx)
AP password	None
Login username	ufr
Login password	ufr
Discovery server port	8880
Master mode POST request	Enabled
Master mode UDP broadcast	Enabled
Master mode UDP broadcast address	Local broadcast address (eg. X.X.X.255)
Master mode linear read	Disabled
Default Bluetooth Low Energy mode PIN	123456

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uFR Online REST services

In the table below are described all REST services available on uFR Online. The HTTP method is POST. Basic Authorization is needed except for /uart1 and /uart2. Username and password are the same as Login.

URL	Parameters	Description
/info	None	Get configuration info.
/scan	None	Get available WiFi networks.
/togglemode	None	Toggle master/slave mode.
/toggletransparent	None	Toggle transparent mode.
/changetransparent	None	Change transparent device.
/changeap	ssid, password	Change device AP SSID and password.
/changehost	host	Change master mode host.
/changebroadcast	ip	Change master mode UDP broadcast IP.
/changeauth	username, password	Change authorization credentials.
/changesta	ssid, password	Connect to the WiFi network.
/setport	port1, port2	Change UDP/TCP ports.
/disconnect	None	Disconnect from WiFi network.
/restart	None	Reboot device.
/toggleserver	None	Toggle UDP/TCP protocol. Only in slave mode.
/toggleble	None	Toggle Bluetooth Low Energy mode.
/setbaud	uart1, uart2	Change UART1 and UART2 baud rates.
/setdefaultbaud	uart	Reset connected uFR device to default baud rate.
/toggle485	None	Toggle UART2 RS485 support.
/setdefault	None	Reset device to factory default settings.

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/togglepost	None	Toggle master mode POST request.
/togglebroadcast	None	Toggle master mode UDP broadcast.
/togglelinear	None	Toggle linear read. Only in master mode.
/changelinearmode	mode	Change linear read mode (1-8).
/changelinearsize	begin, size	Change linear read address and size.
/changelinearauth	auth	Change linear read authmode (0x60, 0x61...)
/changelinearkeyindex	index	Change linear read key index (0-31).
/changelinearkey	HEX string	Change linear read key.
/uart1	HEX string	Send HEX string command to UART1.
/uart2	HEX string	Send HEX string command to UART2.
/tooglebt	None	Toggle Bluetooth Serial mode.
/togglesleep	None	Toggle Modem sleep.
/update	requested_fw_version	Request firmware and update.
/getufrlist	uart	Get the uFR Nano firmware list.
/ufrupdate	uart, vers	Update uFR Nano. Request /getufrlist first.
/changeblepin	pin	Change Bluetooth Low Energy passkey.
/setrtc	rtc	Set RTC UTC date/time.
/getrtc	None	GET request returns RTC UTC date/time.
/getled	None	GET current LED colors (r1g1b1r2g2b2) in HEX
/setled	HEX colors string	Set LED colors
/togglestatic	None	Toggle static/DHCP IP address
/changestatic	ip, mask, gateway, dns	Change static IP address parameters
/getgpios	None	Get all GPIOs states separated by comma.
/setgpios	GPIO1, GPIO2...	Set GPIO state (0 - Low, 1 - High, 2 - Input). Multiple GPIOs can be setted in one request using POST parameters (ex. GPIO1=1&GPIO2=0)

/setbletxpower	bletxpower	Set BLE TX power in range 0 to 7

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uFR Online Reader basic usage

In this section will be described how to use uFR Online reader.

UDP/TCP communication

- All bytes sent to UDP/TCP port 1 will be forwarded to UART1 and vice versa.
- All bytes sent to UDP/TCP port 2 will be forwarded to UART2 and vice versa.
- uFR Series libraries have support for UDP/TCP communication.
- UDP/TCP mode works in parallel with Transparent and HTTP mode.

UDP/TCP communication – Reader opening example

```
/*
Opening reader on IP address 192.168.1.112 and port 8881 for UDP communication.
*/
ReaderOpenEx(0, "192.168.1.112:8881", 'U', 0);

/*
Opening reader on IP address 192.168.1.112 and port 8881 for TCP communication.
*/
ReaderOpenEx(0, "192.168.1.112:8881", 'T', 0);
```

Bluetooth serial mode communication

- All bytes sent to the Bluetooth serial port will be forwarded to UART1 or UART2 and vice versa.
- Bluetooth mode doesn't work in parallel with UDP/TCP and HTTP mode.

Bluetooth serial mode communication – Reader opening example

```
/*
Opening reader in Bluetooth serial mode on virtual port COM34. Must disable reset on opening.
*/
ReaderOpenEx(2, "COM34", 0, "UNIT_OPEN_RESET_DISABLE");
```


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Bluetooth serial mode communication

- All bytes sent to the USB serial port will be forwarded to UART1 or UART2 and vice versa.
- Transparent mode works in parallel with UDP/TCP and HTTP mode.

Transparent mode communication – Reader opening example

```
/*
Opening reader in Transparent mode using ReaderOpen  function.
*/
ReaderOpen();

/*
Opening reader in Transparent mode using ReaderOpenEx function. Must disable reset on opening.
*/
ReaderOpenEx(1, 0, 0, "UNIT_OPEN_RESET_DISABLE");
```

HTTP mode communication

- All HEX string bytes sent in the POST body will be forwarded to UART1 or UART2 and vice versa.
- HTTP mode works in parallel with UDP/TCP and Transparent mode.

HTTP mode communication – GetCardIdEx example

```
/*
Getting Card ID in HTTP mode using HTTP POST request.
*/

HTTP POST Request body sent to uFR Reader /uart1 or /uart2 > 557caa00aaccec

HTTP POST Response body sent from uFR Reader > de7ced0b08044f52dad995000000000000cb
```


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uFR Online Reader protocols structure

In this section will be described how to use uFR Online reader.

Master mode POST request

- In master mode if a card is detected, the device sends HTTP POST request to the host.
- HTTP response must be "OK" or "FAILED" **for firmware version 1.5.4 and below.**
- If the response is "OK", device will beep once and turn on green LED.
- If the response is "FAILED", the device will beep twice and turn on the red LED.
- If the server doesn't respond, the device will beep three times and turn on the red LED.
- **For firmware version 1.6.0 and above see Master mode POST response protocol section.**

Master mode HTTP POST request structure					
*	Form parameters				
Linear read disabled	SN	UID	CTRLINFO	ONLINE	
Linear read enabled	SN	UID	CTRLINFO	ONLINE	DATA
Description	Reader Serial number	Card UID	Control number from 0 to 255	Number 1 or 2 depends of reader	Linear read data as HEX string

Master mode POST response

- When the server receives a POST request, uFR Online is waiting for an HTTP response.
- Response contains HEX String commands from uFR COM protocol.
- Response must contain 3 rows delimited by newline character (\n), one for each UART.
- CMD-EXT must be sent in one string preceded by CMD, without any delimiter.
- Sending multiple commands can be done by spliting multiple strings with whitespace delimiter.

Master mode HTTP POST response structure				
Command sent to UART2	\n	Command sent to UART1	\n	Command sent to Transparent UART
Example - Sending USER_INTERFACE_SIGNAL command to UART1 and UART2				
5526AA000101E0	\n	5526AA000000E0	\n	0
Command sent to UART1	\n	Command sent to UART2	\n	Nothing sent to Transparent UART
Example - Sending USER_DATA_WRITE command to UART1 (CMD_EXT)				
551CAA110000F96A 6A0000360000003000 32003800410054	\n	0	\n	0
Command sent to UART1	\n	Nothing sent to UART2	\n	Nothing sent to Transparent UART

- PHP Server API for handling Master mode request with example is available at: https://www.d-logic.net/code/nfc-rfid-reader-sdk/ufr_online-examples-php-master_mode

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Master mode UDP broadcast

- In master mode if a card is detected and UDP broadcast is enabled, the device sends a UDP broadcast.
- If the HTTP POST request is enabled, the indication is the same as described above.
- If the HTTP POST request is disabled, the device will beep once and turn on a green LED.

Master mode UDP broadcast structure
80/ReaderSerialNumber/CardUID/0

UDP discovery server

- The UDP discovery server is used for finding uFR readers in the local network.
- Send any UDP packet to uFR reader port 8880 and wait for response.

UDP discovery server response example																		
*					**UART 1 PORT**							**UART 2 PORT**						
*	**IP address**				**Port**		**CP**	**Baud rate**				**Port**		**CP**	**Baud rate**			
DEC	192	168	1	5	8881		'T'	115200				8882		'U'	250000			
HEX	C0	A8	01	05	B1	22	54	00	C2	01	00	B2	22	55	90	D0	03	00
*CP is a network communication protocol. 'T' stands for TCP and 'U' for UDP.																		

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uFR Online only COM protocol commands

- This commands are uFR Online only.
- Commands are sent in ASCII mode
- Commands are used in Transparent, Bluetooth Serial and Bluetooth Low Energy mode.

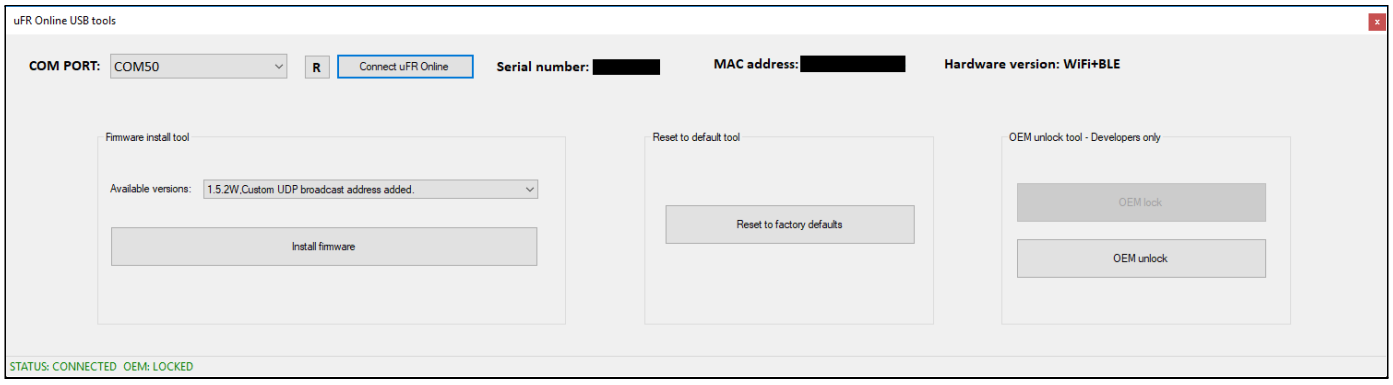
Command	Description
!TURN_MST_MODE_ON!	Toggle device to WiFi master mode.
!TURN_SLV_MODE_ON!	Toggle device to WiFi slave mode.
!TURN_BLE_MODE_ON!	Toggle device to Bluetooth Low Energy mode.
!TURN_SPP_MODE_ON!	Toggle device to Bluetooth Serial mode.
!TURN_HID_MODE_ON!	Toggle device to Bluetooth HID mode.
!TURN_AP0_MODE_ON!	Turn off Access Point when Bluetooth is used.
!TURN_AP1_MODE_ON!	Turn on Access Point when Bluetooth is used.
!TURN_LD0_MODE_ON!	Turn off LED indication when Bluetooth is used.
!TURN_LD1_MODE_ON!	Turn on LED indication when Bluetooth is used.

uFR Online Reader tools

In this section will be described available uFR Online reader tools.

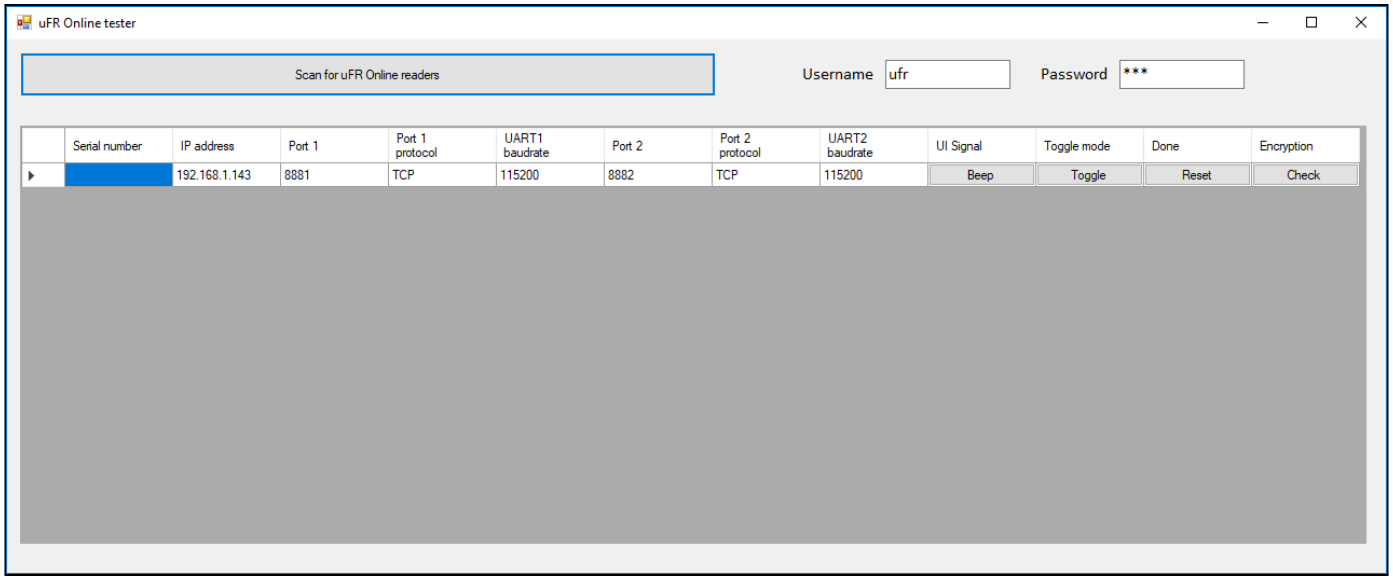
uFR Online flasher oneclick – Update tool

- This tool is used for installing firmware and OEM unlocking device.
- Download tool from: www.d-logic.net/code/nfc-rfid-reader-sdk/ufr_online-flasher-oneclick



uFR Online finder – Network discovery tool

- This tool is used for finding device in the local network.
- Download tool from: www.d-logic.net/code/nfc-rfid-reader-sdk/ufr_online_finder



uFR Online OEM lock/unlock

CAUTION!!!
Devices OEM lock and unlock state can only be changed 6 times (unlock -> lock -> unlock -> lock -> unlock -> permanent lock). After that, when you lock it again, the OEM will be permanently locked!

In this section will be described how to OEM lock and unlock device. By default the device is OEM locked.

- If the device is OEM **locked**, you can install only official firmware.
- If the device is OEM **unlocked**, you cannot install official firmware. Unlocked device can be used as a development platform for writing your application in ESP-IDF, Arduino, Micropython and other available platforms for ESP32.

For locking and unlocking device, uFR Online flasher oneclick – Update tool is used.

OEM lock

In this section will be described how to OEM lock device.

1. Open uFR Online flasher oneclick – Update tool
2. Select COM port and click button connect.
3. Wait for the connection to be made successfully.
4. Click on the OEM lock.
5. Wait for the locking process to finish.
6. After process is done, the latest firmware will be installed.

OEM unlock

In this section will be described how to OEM unlock device.

1. Open uFR Online flasher oneclick – Update tool
2. Select COM port and click button connect.
3. Wait for the connection to be made successfully.
4. Click on button OEM unlock.
5. Wait for the locking process to finish.
6. After process is done, 'hello world' app will be installed on device.

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***Unlocked device restrictions: ESP32 efuse BLK1 and BLK3 are reserved and cannot be used. Also, flash encryption must be disabled.

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uFR NFC Browser Extension

In this section will be described how to use uFR NFC Browser extension with uFR Online reader.

uFR NFC Browser Extension – Useful links

Google Chrome and Opera download link:
https://chrome.google.com/webstore/detail/nfc-reader-browser-extens/kjfmmgpfhdohhcodbkaodgkidbenkgog

Mozilla Firefox download link:
https://addons.mozilla.org/en-US/firefox/addon/nfc-reader-browser-extension/?src=search

Native host installers for Window, Linux and MacOS download link:
https://www.d-logic.net/code/nfc-rfid-reader-sdk/ufr-browser_extensions/tree/master/Store%20installers

uFR NFC Browser Extension demo web app:
https://www.d-logic.net/browser-extension-demo/

uFR Reader API reference document:
https://www.d-logic.net/code/nfc-rfid-reader-sdk/ufr-doc/blob/master/uFR%20Series%20NFC%20reader%20API.pdf

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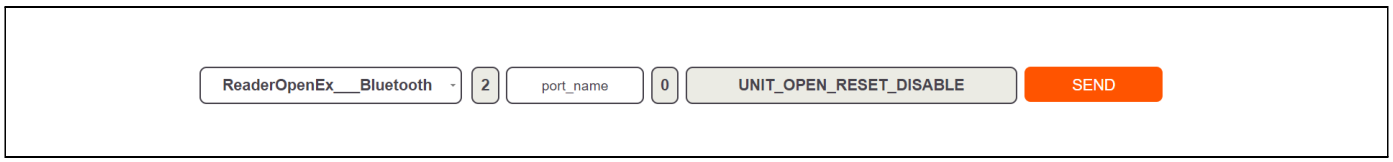
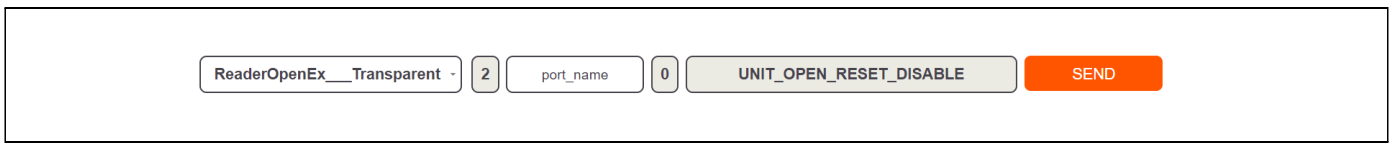
uFR NFC Browser Extension - UDP reader opening example

uFR NFC Browser Extension - TCP reader opening example

uFR NFC Browser Extension - Bluetooth serial reader opening example



uFR NFC Browser Extension - Transparent serial reader opening example



Revision history

Date	Version	Comment
2019-04-11	1.0	Base document.
2019-05-09	1.1	Master mode communication protocol changed.
2019-06-17	1.2	Added firmware 2.0+ changes.
2019-06-20	1.3	RTC and IO pins control added.
2019-06-24	1.4	OEM lock/unlock.
2019-07-19	1.5	uFR Test added.
2019-08-09	1.6	HID reverse UID option added.
2019-09-20	1.7	Static IP address option added.
2020-02-11	1.8	Added UART async mode and uFR protocol async mode.
2020-02-13	1.9	BLE receiving data mode
2020-03-12	2.0	DESFire UID, additional custom POST parameters
2020-03-25	2.1	Cloud IoT support
2020-04-29	2.2	Log mode support
2020-05-26	2.3	UDP broadcast settings
2020-05-27	2.4	Network timeout settings
2021-01-12	2.6	Transparent mode reader opening updated
2021-01-18	2.7	Added brightness control and AP Tag polling timeout
2021-03-03	2.8	BLE Security settings
2021-05-27	2.9	HTTP rest API updated.

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2021-08-31	3.0	BLE TX power added.
2021-09-07	3.1	Bluetooth/Network combination mode added.

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